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ABSTRACT

Reports are given on the current status of research projects sponsored by the Scottish Council for Research in Education: (1) teaching strategies in the primary school; (2) awareness of career opportunity; (3) Second International Mathematics Survey; (4) diagnostic assessment in secondary schools; (5) social construction of teachers' careers; (6) writing instruction; (7) teaching writing for learning; (8) student choice in higher national diploma courses; (9) corporal punishment and alternative sanctions in schools; (10) open-plan and other areas in secondary schools; (11) perceptions of the content and function of school-based assessment; (12) Pakistan primary education project; (13) evaluation of the Craigroyston curriculum project; (14) community schools in the Lothian region; (15) a study of young adults in Scotland; (16) further education for the handicapped; (17) evaluation of a local authority assessment initiative; (18) replication of a 1970 study on achievement in science and reading comprehension; (19) replication of a 1978 primary school survey of achievement in mathematics and reading; (20) an evaluation of the links established between primary schools and nonformal education agencies; (21) commentary on the primary teaching practice project; (22) further education colleges and changing student needs; (23) St. Andrew's College: a study of amalgamation; (24) 1983 mathematics assessment; (25) Scottish museums of education; and (26) research service unit. A paper included in this report presents an overview of observed beneficial side-effects resulting from research projects over a five-decade period. A list of research studies relating to education presented for postgraduate degrees and diplomas in Scottish universities in 1981 is also included along with accounts of committee meetings, financial status, and the council's work with other organizations. (JD)

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THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

FIFTY-FOURTH ANNUAL REPORT
1981-82

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CONTENTS

	Page
List of Officers and Members for 1981-82	5
List of Principal Officials and Staff	7
Council—Chairman's Report for 1981-82	9
Reports of Committees	
(a) Finance and General Purposes Committee	11
(b) Communications Committee	12
(c) Research Committee	14
Summary Report of SCRE Projects	16
Reports on Projects	
Teaching Strategies in the Primary School	17
Awareness of Opportunity	17
The Second International (IEA) Mathematics Survey	18
Diagnostic Assessment in Secondary Schools, Stage 2	18
The Social Construction of Teachers' Careers	19
Writing Across the Curriculum, Stage 1	19
Writing Across the Curriculum, Stage 2: Teaching Writing for Learning	20
Student Choice in Higher National Diploma Courses	21
Corporal Punishment and Alternative Sanctions in Schools	21
Open-Plan and Other Areas in Secondary Schools	21
Perceptions of the Content and Function of School-based Assessment	22
Pakistan Primary Education Project	23
Evaluation of the Craigroyston Curriculum Project	23
Community Schools in Lothian Region	23
After School—A Study of Young Adults in Scotland	24
Further Education for the Handicapped	24
Evaluation of a Local Authority Assessment Initiative	25
Replication of the 1970 IEA Studies of Achievement in Science and Reading Comprehension	26
Replication of the 1978 Primary Schools Surveys of Achievement in Mathematics and Reading	26
An Evaluation of the Links established between Primary Schools and Non-Formal Education Agencies such as Edinburgh Zoo and the Royal Scottish Museum	27
Commentary on the Primary Teaching Practice Project	27
Further Education Colleges and Changing Student Needs	27
St Andrew's College: A Study of Amalgamation	28

Page

Reports on Projects *(continued)*

1983 Mathematics Assessment 28
Scottish Museums of Education 28
Research Services Unit 29

SCRE Silver Medal 30

SCRE Research Prizes 30

Liaison with Other Organisations, 1981-82, including Consultative and Advisory Services undertaken by Staff, Papers Delivered by Staff, and Staff Publications 31

Accounts for the Year Ended 31st March 1982 36

Notes on Accounts—including note of grants from Regional Education Authorities, the EIS and its Local and District Associations, and other bodies 39

"Side Effects in Educational Research", the paper delivered by Dr David A Walker on the occasion of his being awarded the Fellowship of the SCRE, September 1981 43

A List of Researches relating to Education presented for Postgraduate Degrees and Diplomas in Scottish Universities in 1981 50

List of Currently Available Publications 61

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*TOM HAY

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† Seconded to SCRE
* Part-time

THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

Fifty-fourth Annual Report 1981-82

COUNCIL (Chairman — Mr Hugh Fairlie)

Chairman's Report

While it might seem from the Minutes of the Board of Management that much of the concern of the Council in the past year has had reference to conditions of service of staff and ways of organising the programme of research, this must not be allowed to disguise the fact that 1981/82 has been yet another year of solid achievement and production by the staff of the Council.

Four projects reports have been published in the course of the year, while no fewer than eight other projects have been completed and are being prepared for publication. Of the former group, perhaps the one which had received most attention, and, in the eyes of some, notoriety, was that on corporal punishment in schools and entitled *Making the Change*. However one may regard the contentious issue of abolition, the research work undertaken by the Council in this field must prove of great value to those who have to make the change, and this publication has already had wide circulation in Scotland. Equally in demand, although for different reasons, have been the various booklets on Diagnostic Assessment.

Other projects, listed in the Annual Report for 1980/81, are continuing according to schedule, while a number of new projects have been launched in the course of the year. Information on these is provided elsewhere in this Report, but it might be of general interest to mention one of these in more detail.

In February 1981 the Council convened an informal meeting of interested parties to discuss the possibility of establishing a museum of education. As a result of that initiative, and following discussion with the SED and COSLA, a relatively small but important study has been undertaken, funded by the Department, to survey existing practice by the various authorities in Scotland, to document existing holdings of

material, and to discover the procedures adopted by these authorities for acquiring new material. The Council were fortunate to enlist the services of Mr T E M Landsborough, formerly Director of Education for Clackmannan, as research officer. He undertook this task in March of this year, has completed the assignment, the Report is in draft, and it will be published in the autumn of 1982. It is expected that the report will point to weaknesses in current practice and will help to bring to notice the need for positive initiative and action to conserve many of the examples of our educational past.

There has been much discussion within the Board in the past year on the subject of how to disseminate the work of the Council, the service it offers, and the results of its researches. The Council is well aware that if it is to be of genuine service to the educational system in Scotland, it must be in continuous dialogue with each and all of the various bodies and institutions in active service, and for whom the results of research work should be of more than passing interest. This means that the Council and its staff must be ready always to receive proposals for research and to establish lines of communication along which its findings and recommendations can return to those who work in the schools. With this in mind, a meeting has been held annually with the EIS, and in the course of the current year the Chairman and the Director have also initiated fruitful and ongoing discussions with the Headteachers' Association of Scotland and with the Association of Directors of Education in Scotland. To provoke discussion on topics of general interest, in the past year a number of seminars for staff and other interested parties have been held. Among the topics have been included the issues of Falling Rolls in Scottish Schools, Management and Decision Making in Secondary Schools, and the Education of Teachers.

Costs keep rising, and it becomes increasingly difficult to maintain our desired level of 'in-house' initiated research. The Scottish Education Department continues to be far and away the major source of finance for the Council and, as always, the Council acknowledges its gratitude to the Department and its officers for their continued interest and support, and for the very considerable grant provided to cover costs and overheads. It will be appreciated, however, that any institution dependent for the very major part of its resources upon one source does not have the right to expect or claim the complete independence which some would wish, or indeed, assert. In spite of the manifest goodwill and support of the officers of the Department, the Council cannot rely on such assistance continuing at its present level, and it would be encouraging to see those bodies which have always acknowledged their interest in the work of the Council increasing their contributions to a greater degree than they do to meet the effects of inflation.

There have been no changes in the membership of the Council since those given in last year's Report, but Mr John Hume has assumed the

chair of the Finance and General Purposes Committee and Mr S Magowan of Communications Committee. To them, and to Mr H Philip, chairman of the Research Committee, the Council would wish to express its appreciation of the time and interest which they give to furthering the work of the Council.

Finally, to the Director and the staff must be extended our appreciation at the conclusion of what has been a very fruitful year of endeavour and achievement.

REPORTS OF CHAIRMEN OF COMMITTEES

Finance and General Purposes (Chairman: Mr John Hume)

The Committee met six times during the year and the work has been mainly concerned with the following matters:

Staff Negotiations	—	Job Classification Review and Job Security
Restructuring	—	Appointment of Two Senior Research Officers
Finance	—	Planning for 1982/83 and beyond

As mentioned in last year's report, the reorganisation of duties following the abolition of the post of Administrative Officer was kept under review and it is to the credit of the Depute Director, Cashier, and Chief Clerk that the challenge has been successfully met. In addition a computerised system of accounting was introduced as from 1st April 1982.

Staff Negotiations

Job Classification Review

The negotiations referred to in the 1980/81 report were concluded and approved by the Treasury with an effective implementation date of 1st October 1981.

Job Security

Discussions are taking place with the Unions in relation to drawing up a mutually acceptable job security agreement.

Restructuring — Appointment of SROs

It is planned to proceed with the appointment of an additional SRO immediately and a second as and when funds permit. These appointments are designed to improve the supervision of existing projects, to enable more time to be devoted to the preparation of new proposals, and to enable the Council to undertake more consultation and liaison with outside bodies in the educational field.

Finance

The audited accounts appear on pages 36 to 42. Supplementary information is:

No remuneration is paid by the Council to its officers or members, but travelling expenses were reimbursed to the extent of £2,100. Corresponding amounts for employees were:—

Officials	£3,444
Internal Programme	£2,570
Externally-funded Projects	£16,325

The Accounts show a surplus on the year's working of £18,253 but this is largely accounted for by the decision taken to delay the start of a new internal project in the light of continuing uncertainties about the Council's financial position in 1982/83. Some of the surplus will be used specifically to fund the appointment of an additional SRO to assist in the supervision of the Council's programme of work.

Funding 1982-83

Current estimates of funding indicate that the Council should be able to balance income and expenditure in 1982-83 without any reduction in staff paid from basic grant. Total income from basic grant is estimated at £318,000 including £284,000 from the Scottish Education Department. However, it has been necessary to implement a number of economies in other aspects of the Council's work to achieve a balance. There are indications that the year 1983-84 may require further economies to be made, since the Council's grant is likely to be cut even further in real terms in that year.

Among the smaller grants and donations received during the year, the Council is particularly pleased to acknowledge a donation of £100 received from a wellwisher in Calgary, Canada.

Communications (Chairman: Mr Samuel A Magowan)

Perhaps the most notable event of the year so far as publications were concerned was the extremely rapid production and publication of *Making the Change*. This book reported on the issues that had been raised by the Council's study, commissioned by the Convention of Scottish Local Authorities, of a number of schools that had eliminated corporal punishment or were in the process of seeking to eliminate it or greatly reduce its incidence. When a final report on the project — essentially working papers prepared at great speed for the benefit of the COSLA Working Party — was completed in June 1981, it was realised that there was an urgent need to produce a relatively short and readable text of direct relevance to teachers who were likely to be called on, in the short-term rather than the long, to make major changes in their disciplinary systems. The experience of the innovating schools that

the research sought to describe and interpret had a topicality almost without parallel in the work of the Council. Priority was accordingly given to the writing and preparation of the booklet, and printing was thereafter effected in a very short period. As a result, *Making the Change* was made available by late October. The effort that had been made by all concerned was rewarded by a ready response from education authorities and individual schools and teachers, and, despite the initial printing having been larger than usual for SCRE publications, by February 1982 two reprints had proved to be necessary.

It is, of course, not to be argued that either topicality or volume of sales necessarily reflects the value and importance of a publication. Other new publications during the year have added to the substantial number produced in recent years. The first of these was *Routes and Results*, the second of a series of three reports arising from the long-term Awareness of Opportunity project. This, with its predecessor, *Choices and Chances*, has documented the whole process of course selection in secondary schools, of decision-making related to staying on at school (or entering other forms of education) or to entering specific forms employment. Their author, Alexander C Ryrie, is already preparing his third volume. However, in the meantime, two members of his research team, Janice Hunt and Peter Small, have produced an additional booklet relating to a particular aspect of the research for which they had had special responsibility: *Employing Young People: a study of employers' attitudes, policies and practice*. This work, produced on their own initiative, was complementary to the main series of reports.

Another new report, *Student Choice in HND Courses* by Susan Freshwater, has addressed itself to the problems experienced in course selection by potential applicants for courses in Further Education Colleges. It provides a useful guide to a previously little charted area.

The most recent of the Council's publications, *Classroom Management Strategies* by Malcolm Corrie, Jennifer Haystead, and Stefan Zaklukiewicz, was published in June 1982. This book, a report on the project of the same name, seeks to explore classroom management from the perspectives of both teachers and pupils.

Although in terms of the number of new titles issued there was some fall off from the unprecedented peak achieved in the preceding year, sales maintained the record high levels achieved in the two preceding years. Moreover reports from other major projects are nearing the stage of publication. Notable amongst these are Ernest Spencer's on the Writing Across the Curriculum project, and Maureen McMillan's on the Open-Plan and Other Areas in Secondary Schools project. It is hoped that both will be published not later than January 1983.

The written word is the most prominent form of dissemination of the Council's work, through book publications and the twice yearly news letter, yet other means of communication, both formal and informal,

are extensively employed, including contributions by researchers to in-service courses for teachers, membership of committees, and consultancies. Faced with a dearth of local finance for bringing teachers to conferences organised by the Council, the Communications Committee decided to institute a series of seminars for representatives of local authorities (both officials and advisers) and colleges of education who might themselves act as channels of communication in the course of their ordinary work. Although a loss of direct personal contact with teachers was regretted, it was recognised that this offered a cost-effective means of reaching a wide clientele. The first of these seminars was held in Edinburgh in February. Further seminars in other locations are planned.

The concern of those interested in the history of education has been served by the photocopying and lodging in a number of Scottish libraries of R Macdonald's *Scottish Pioneers in Education Overseas*. Provision has also been made for it to be available for special order.

It has long been the Council's policy to take advantage of visits by researchers and educators from overseas by arranging for them to give public lectures. Such was a lecture given in Glasgow in April 1982 by Dr Lyle M Spencer, who described the identification and assessment of competencies of relevance in professional, managerial, and human service occupations. He described techniques that he and others had used in a number of contexts, including the selection and assessment of junior foreign service officers for the United States State Department. It is hoped in due course to publish Dr Spencer's paper.

It is not, of course, enough to make information available: its availability has to be known. This end has in part been achieved through the newsletter, *Research in Education*, and through mailed communications. Three further steps have, however, been taken in the past year. First, since March 1982 six "pages" of information about the Council, its projects, and its publications have been available on PRESTEL, the Post Office's teletext system. Second, a number of light-weight exhibition screens have been purchased so that displays relating to the Council's activities may be more frequently and more economically staged than has previously been possible with large heavy screens. Third, steps have been taken to ensure the inclusion of Scottish items in the *EUDISED R and D Bulletin*, a listing by the Council of Europe's Documentation Centre for Education in Europe of current research projects. It is the intention of the Communications Committee to evaluate these steps and, as previously, to keep all aspects of its policy under regular review.

Research Committee (Chairman: Mr H L Philip)

The Committee met six times during the year.

Major discussions were held on (1) ways to assist staff to develop new

proposals, (2) possible economies which might require to be made in the Council's internal research programme in 1982-83 in order to meet budget constraints, and (3) an ongoing review of the Council's research policy.

Despite increasing financial constraints, the Council has been able to maintain a wide-ranging research programme. Currently there are 15 research projects under way, of which 13 are externally funded. New projects begun during the year include Writing Across the Curriculum Phase 2 (p 20), Commentary on Primary Teaching Practice (p 27), Changing Student Needs in Further Education Colleges (p 27), 1983 Mathematics Assessment (p 28), and Scottish Museums of Education (p 28). In addition three proposed projects are awaiting decisions on funding from external sources.

In 1982-83 grants to the Council from external sources for specific projects will amount to approximately £203,000, the main contributors being SED (£133,000), Van Leer Foundation (£27,000), SSRC (£20,000), British Council (£11,000) and Lothian Region (£10,000). This sum nevertheless represents a reduction of £93,000 (32%) in external funding by comparison with the previous year 1981-82. Furthermore [illegible] of the thirteen externally funded projects will come to an end in the course of the year, hence, unless additional funding for new projects is secured, a further reduction in the Council's external programme is likely to take place.

To provide additional supervisory capacity for the existing programme and to provide more time for the development of new research proposals, the Council has agreed to approve a second Senior Research Officer to assist the Directorate.

SUMMARY REPORT OF SCRE PROJECTS

Title of Project	*Principal Research Worker(s)*	*Starting Date*	*Approximate Duration*	*Source of Finance*	*Report Page*
Teaching Strategies in the Primary School	J L Powell	1973	9 years	SCRE	17
Awareness of Opportunity	A C Ryrie	1976	6 years 8 months	SED, SCRE	17
Second International (IEA) Mathematics Survey	G J Pollock and W G Thorpe	1978	4 years	SCRE	18
Diagnostic Assessment in Secondary Schools, Stage 2	W B Dockrell and H D Black	1978	3 years	SED	18
The Social Construction of Teachers' Careers	M Corrie	1978	5 years	SSRC/SCRE	19
Writing Across the Curriculum, Stage 1	E Spencer	1978	3 years 9½ months	SED/Local Authorities	19
Writing Across the Curriculum, Stage 2: Teaching Writing for Learning	E Spencer	1981	3 years 1½ months	SED	20
Student Choice in Higher National Diploma Courses	S Freshwater	1979	1year(Repon 1982)	SED	21
Corporal Punishment and Alternative Sanctions in Schools	C Cumming	1979	1 year 6 mon'hs (Report 198.)	SED/Local Authorities	21
Open-Plan and Other Areas in Secondary Schools	M McMillan	1980	2 years 2 months	SED	21
Perceptions of the Content and Function of School-based Assessment	W B Dockrell and H D Black	1980	2 years 3 months	SCRE/SSRC	22
Pakistan Primary Education Project	W B Dockrell	1980	3 years	British Council for World Bank	23
Evaluation of the Craigroyston Curriculum Project	A Peacock	1980	3 years	Van Leer	23
Community Schools in Lothian Region	A Peacock	1980	2 years 6 months	Local Authority	23
After School — a Study of Young Adults in Scotland	G J Pollock and D MacDonald	1980	2 years	SED/SSRC	24
Further Education for the Handicapped	M Corrie	1980	3 years 3 months	SED	24
Evaluation of a Local Authority Assessment Initiative	W B Dockrell and H D Black	1980	3 years	SED/Local Authority	25
Replication of the 1970 IEA Studies of Achievement in Science and Reading Comprehension	G J Pollock	1981	1 year 6 months	SED	26
Replication of the 1978 Primary Schools Surveys of Achievement in Mathematics and Reading	G J Pollock	1981	1 year 3 months	SED	26
Evaluation of Links between Primary Schools and Non-Formal Education Agencies	J Raven	1981	1 year 10 months	SED	27
Commentary on the Primary Teaching Practice Project	J Raven	1981	1 year 6 months	SED	27
Further Education Colleges and Changing Student Needs	A C Ryrie	1981	2 years 2 months	SED	27
St Andrew's College: A Study of Amalgamation	A Pollock	1982	5 months	St Andrew's College	28
1983 Mathematics Assessment	G J Pollock and B Duncan	1982	2 years 6 months	SED	28
Scottish Museums of Education	T Landsborough	1982	2 months	SED	28

REPORTS ON PROJECTS

(Note: Additional information on any of the projects described below will be supplied on application)

Teaching Strategies in the Primary School
(Researchers: J L Powell (Principal) and J Hart)

Thanks to the provision of a research assistant for approximately four months from December 1981 and to the freeing of the principal researcher from some of his other duties, very substantial progress has been made. The report that is being prepared will describe the characteristics of clusters (or groups) of teachers whose teaching practices and styles were found in the course of observation to be very similar (as assessed in respect of the forty-three variables of the SCOTS schedule that was created in the earlier stages of the project). It will also attempt to describe associations observed between the observed teaching characteristics and a number of measures of pupils performance. These measures, specially devised for the project, relate to performance in arithmetic (both computational skill and grasp of related concepts), attitudes to school and work, and application to tasks where seeking of understanding is involved. Since these test instruments were applied twice, at an interval of 12 months (at the end of the preceding school year and at the end of the year in which the observation took place), changes — or lack of change — and "starting points", as well as absolute levels, can be taken into account in the formulation of hypotheses that will, it is hoped, do much to illuminate the significance of patterns of teacher behaviour observable in primary school classrooms

Awareness of Opportunity
(Researchers: A C Ryrie (Principal), J Hunt, P Small, E Gordon)

This project is now being completed. During the course of more than six years we have followed two samples of young people, 1,186 in all, drawn from eight schools in two areas of Scotland, as they have moved through the later stages of schooling and on into the world of employment or further education. In the course of the project interviews have been conducted with the young people at various stages and with their parents, teachers and others, and information has been gathered about their progress through school and what happened to them after they left. The purpose of the project has been to examine the developing intentions of the young people and the process of decision-making about courses and subjects in school and about employment and further education after school, including the influence of parents, teachers, the schooling process and the local labour market on these decisions.

The work of the project has fallen into three stages. The first stage was concerned with the process of decision-making about subjects to be

studied in the third and fourth years. This resulted in the project's first publication, entitled *Choices and Chances: a study of pupils' subject choices and future career intentions*, which was issued in 1979.

The second stage had to do with the later years of schooling, focusing on the extent and nature of differentiation or sorting of pupils, decision-making about leaving school or staying on, and the character and purpose of the fifth and sixth years. A report on this stage of the project was published in 1981, under the title *Routes and Results*. Within the context of the project as a whole the purpose of this report is to consider how the schooling process shapes the prospects and the opportunities of the young people.

The final stage of the project has involved a follow-up of the young people approximately a year after they left school. The final report of the project, which is now nearing completion, attempts to relate these outcomes to the earlier schooling process, the structure of local opportunities and the practice of careers education and guidance.

The project has also undertaken a small scale survey of employers' attitudes, policies and practices in connection with the employment of young people, and this has been published by SCRE under the title *Employing Young People* by Janice Hunt and Peter Small.

The project is funded jointly by the Scottish Education Department and the Scottish Council for Research in Education.

The Second International (IEA) Mathematics Survey
(Researchers: G J Pollock and W G Thorpe (Principals), S Freshwater, S Rochow, J Donoghue, D Scott)

Scotland is one of twenty-six countries involved in this study which is co-ordinated by the International Association for the Evaluation of Achievement in Education. Its aim is the systematic examination of the relationships, at the Secondary stage, between achievement in Mathematics and the characteristics of the school system. Insofar as the present study is an extension of the First International Mathematics Study of 1964, historical changes will also be identified and analysed.

Data collection for the three year groups under study, S2, S4 and S5/6, took place towards the end of 1980. Work in the past year has been devoted to the coding of the resulting data, their transfer to computer tape and initial processing. The final computer data tapes required by the international centre in New Zealand were despatched in December 1981. Preliminary analyses of the data are now under way both here and in New Zealand. The main analysis of the data will be undertaken in 1982/83.

Diagnostic Assessment in Secondary Schools, Stage 2
(Researchers: W B Dockrell and H D Black (Principals), H Page, G Leckenby, R Goring)

The participating teachers were interviewed in order to study their

perceptions of diagnostic assessment. Lessons were observed and interviews were carried out with a number of pupils. The analysis of this data has allowed the team to develop a picture of the problems involved in the use of the diagnostic approach.

Four teachers' handbooks have already been published and resources of diagnostic instruments have now been prepared. A final report on the Project is in the hands of the advisory committee.

The Social Construction of Teachers' Careers
(Researchers: M Corrie (Principal) and J Hart)

This project was completed at the end of 1981 and a report is in the course of preparation. The chief aim of the project was to identify the way secondary school teachers progress through the various work situations which comprise their careers and the way this influences the kind of work they do, the nature of the satisfaction they obtain from such work, and the commitment they develop towards it. A further aim was to describe the implications of such career movement for the educational arrangements of schools, in that these are dependent on the flow of teachers into, within, and from different kinds of work in teaching.

The project was supported by a grant from the Social Science Research Council. Work on the project chiefly involved in-depth interviews with teachers occupying a range of posts in fifteen schools, followed by a questionnaire survey of one-third of all the teachers in the schools.

Writing Across the Curriculum, Stage 1
(Researchers: E Spencer (Principal), J P Lancaster, J Roy, J Benvie, I McFadyen)

This descriptive project, funded by the SED, is now completed. The report shows the amounts and types of writing produced by pupils in all parts of their school work and describes in detail the context in which they did it. Thus information is provided about teachers' and pupils' views on the purposes and importance of writing, about the teaching and use of it in the secondary school generally, and about the qualities expected in it by the teachers and hoped for by the pupils.

This information was obtained by a survey of the writing of 300 pupils in about 20% of Scottish secondary schools, and by "in-depth" studies of the work and ideas of 30 pupils and their teachers in each of eight schools. The latter depended heavily on analysis of interviews with the teachers and the pupils and of detailed records kept by the teachers of the circumstances surrounding each task, as well as on the collection by the researchers of copies of the pupils' written work. The researchers also observed some of the classes taken by the pupils.

The account of current thinking and practice is followed by attempts to explain the main findings, a critique of them in relation to a range

of ideas about learning and writing, and a discussion of the issues for secondary schools which seem to emerge.

It is hoped that a report on the project, *Writing Matters*, will be published early in 1983.

Writing Across the Curriculum, Stage 2: Teaching Writing for Learning
(Principal Researcher: E Spencer)

This project, which is funded by the SED, grows out of the recently completed descriptive study, Writing Across the Curriculum, Stage 1. Its aims are to establish, in collaboration with teachers, classwork designed to develop certain skills considered to be central to both writing and learning in various subjects, to describe the process by which this work is planned and implemented, and to evaluate its effects.

Case studies will be conducted in a number of schools. In each school, teachers of two or three subjects will incorporate into their syllabus activities designed to help pupils develop skills which have been identified by the teachers as important. These may include, for example, 'accuracy of definition', 'paraphrasing', 'note-taking', 'summarising', 'organisation of ideas/information', all aspects of writing mentioned by many teachers of various subjects in the earlier project as potentially falling within their responsibility. Besides their value in communicating information, these skills have evident functions in the process of grasping and clarifying ideas and integrating them with one's existing set of knowledge.

The researchers will offer help in planning ways of enabling pupils to practise and improve both thinking and writing in the subjects concerned. The 'teaching' mentioned in the project title is to be understood very broadly to mean any activity intended to help pupils to become better motivated, more confident and more effective thinkers and writers. Accordingly, techniques and suggestions for writing activities will be drawn from several sources.

As far as possible, the teaching will be organised so that the same group of pupils experiences the special writing activities in two or, in some cases, three subjects. It is likely that, in different schools, the researchers will be working with teachers of S2, S3, S4 and S5 pupils. Teachers of History and of Science subjects in several schools have already shown interest in the project, and the S5 work will be in Home Economics and Business Studies.

The evaluation element in the work of the project will consist in description of the effects of the teaching programme on pupils' performance, strategies for writing, and attitudes, and on the teachers' ideas about the place of writing in their courses. Information will be obtained by interviews, by observation of the teaching, from records kept by the teachers, and by analysis of pupils' written work.

It is intended that, in the cases of a few groups of pupils involved in

the project, some attention will be paid to general learning strategies, as well as to 'writing for learning'. This part of the work will serve as a 'pilot' exploratory study of a wider issue — the appropriateness of teaching styles to pupils' favoured learning strategies.

Student Choice in Higher National Diploma Courses
(Researcher: S Freshwater)

The submission to the funder (the SED) of a final report on this project was reported last year. The report has now been published under the title, *Student Choice in Higher National Diploma Courses*.

Corporal Punishment and Alternative Sanctions in Schools
(Researchers: C Cumming (Principal), J Tulips, T Lowe, and C Wakeling)

It was reported last year that the final report to the Working Group on Corporal Punishment of the Convention of Scottish Local Authorities was submitted to that Working Group in July 1981. In November 1981, that report was published by COSLA as Appendix 3 of the Report of the Working Group. In the same month SCRE published *Making the Change*, a booklet based on the other report but written so as to interpret the findings for teachers and others and so as to relate them to issues that it was expected would concern teachers very closely wherever local authorities decided to abolish or phase out the use of corporal punishment.

Although the research had involved the study of some schools that were not seeking to abolish corporal punishment, *Making the Change* concentrated on the experience of those studied that had abolished it or were in the process of phasing it out, for it was thought that what would be most helpful to other teachers would be an account of successful experience and of how these schools had sought to resolve problems commonly associated with the alternative sanctions employed. (It should be noted that the disciplinary systems established appeared to be more important than the sanctions embodied in the systems, and that the sanctions themselves were ones familiar to most teachers.)

The high sales of the book — which included many bulk orders from local authorities — suggest that the book has been seen to meet a need — and not only in areas where a decision to abolish corporal punishment has been taken. It does indeed seem reasonable to claim that *Making the Change* is a useful guide to understanding disciplinary systems irrespective of the particular sanctions employed.

Open-Plan and Other Areas in Secondary Schools
(Researchers: M McMillan (Principal) and K MacLennan)

This project, which has now been completed and which was financed

by the Scottish Education Department, had as its objective to ascertain how open-plan accommodation in secondary schools can best be used both from the point of view of effective teaching and from that of optimum use of space. The investigation was limited to two types of subject: one involving a substantial amount of practical work; and the other involving activities characteristic of the "academic" subjects. Home Economics and Social Subjects respectively were chosen to represent these two types.

The field-work consisted of case studies in eight schools, four in each subject area. The Departments ranged from one having accommodation all of which was open-plan to ones having a combination of open-plan and closed rooms.

In the work attention was focused both on the accommodation and on the use made of it, with a view to assessing what features of the particular designs studied facilitated or hindered particular types of activity teachers wished to follow and also whether the sorts of teaching that the proponents of open-plan hoped to encourage or indeed make possible were being undertaken. Whether teachers were happy or unhappy with their working environment and with the associated organisational practices was also investigated and reasons sought.

It is hoped to have the report published by January 1983.

Perceptions of the Content and Function of School-based Assessment
(Researchers: W B Dockrell and H D Black (Principals), N I McKay, D M Smith (until December 1981), J Chambers)

Despite the current levels of interest and activity in the field of school assessment and reports, we have little objective knowledge on what teachers, parents, pupils and employers think schools should assess and report on or about what these groups see as the functions of assessment and reporting. This SSRC-funded project — which arises from the Council's previous work in pupil profiles, school-based assessment in the affective domain, and diagnostic assessment in secondary schools — addresses itself to these questions in the hope that its findings may prove valuable to those planning change in the area.

A questionnaire survey carried out early in 1980 produced a national picture of assessment and reporting practices in Scottish secondary schools, and on the basis of this information four case-study schools representing various innovations in the field were selected. These innovations related to (1) criterion-referenced assessment and reporting for S1 and S2 pupils; (2) profiled leaving reports for S4 and S5 non-SCE leavers; (3) diagnostic assessment for S1 pupils in a number of subjects; (4) assessment in the affective domain with S3 pupils. Partly-structured interviews with teachers, parents, pupils, employers and careers officers have been conducted in each of these schools and a follow-up questionnaire sent to a larger sample of employers.

Pakistan Primary Education Project
(Project Co-ordinator: W B Dockrell; Consultancy Staff: M Bray, P Martin, A C Ryrie, G Siann)

The Council continues to provide consultants to the Government of Pakistan for the Evaluation of the Primary Education Project. Consultants in the area of achievement measurement, attitude measurement, demographic studies and qualitative studies, have visited Pakistan to consult with the local research teams.

Evaluation of the Craigroyston Curriculum Project
(Researchers: A Peacock (Principal), J Crowther)

This project consists of an evaluation by SCRE of a programme to facilitate the transformation of Craigroyston High School into a Community School. Both the programme and the evaluation are funded by the Van Leer Foundation. In the course of the programme community participation is being developed through working parties which deal with such matters as lifelong education, the Under-Fives Centre, the Youth Club, the community newspaper, the arts, learning resources, etc. The programme itself is managed by a committee on which all these working parties are represented. During the second year of the programme initiatives related to communication skills and adult basic education have been incorporated.

The evaluation uses a variety of data-gathering techniques to monitor the complex network of activities and interaction taking place, and has so far concentrated on the highlighting of key issues and questions relevant to the school, to the community and to other interested parties such as professional community workers. Feedback has been emphasised through the circulation of discussion papers and of reports, of which ten have been produced so far.

Community Schools in Lothian Region
(Researchers: A Peacock (Principal), M Vallely)

The principal aim of this study, which was commissioned by Lothian Region, is to focus on the impact which designation as a community school may have upon the schooling provided.

The project is exploratory in character and has set out to describe the perceptions of, and responses to, community schools amongst pupils, community participants, school staff, and Regional officials.

In order to illuminate issues which arise from questions about the past and future development of community schools, the research is moving towards an account based on different views of community schools and the change processes by which they are created. Perceptions of the community schools will then be analysed in the light of evidence gathered from the participants, in order to draw out their implications for schooling.

The project is funded by Lothian Region.

After School — A Study of Young Adults in Scotland
(Researchers: G J Pollock (Principal), D MacDonald, S Day)

This project is an extension of the longitudinal study of the age-cohort previously involved in the Trends in Secondary Education Project which was funded by SSRC from 1974-79. The extension covered the period 1979-81 and will provide a detailed picture of (a) the education, employment and training undertaken by young adults in Scotland up to age 22 and (b) how far previousiy expressed aspirations and expectations are matched by real-life experience in seeking and finding employment. Comparisons of the educational training and employment opportunities available to boys and girls will also be studied.

The study is based on a follow-up of a selected group of 926 young people from the original cohort of 1,950. The follow-up group is made up of three main sub-groups:

(1) those who entered full-time courses of study after leaving school;
(2) those who entered employment with Higher Grade SCE qualifications;
(3) those who left school and entered employment with O-Grade qualifications or none.

Data has been collected through a structured interview covering five main areas:

(a) Employment.
(b) Unemployment.
(c) Further Education and Training.
(d) Fulltime Post-School Education.
(e) General/Future Aspirations.

Interviewing was carried out between May and October 1981 and a total of 685 interviews was finally achieved. Only 7% of the original group of 926 refused to participate, the others being not contactable for various reasons, eg illness, living out of Scotland, or present address unknown.

Much of the work since October has been concerned with the coding of the interview schedules. This work is now virtually complete, and preliminary data analyses are under way.

The project is funded jointly by the Scottish Education Department and the Social Science Research Council.

Further Education for the Handicapped
(Researchers: M Corrie (Principal), S Zaklukiewicz)

The project is concerned with developments in the provision of education for handicapped young people of school leaving age, in particular with the preparation for the uptake of further education by the handicapped. The focus of the project, which is funded by the Scottish Education Department, is on developments considered to be of

particular interest and value to those working in this area of the educational service. The project comprises four linked studies and for each study a report will be produced which will aim to serve as a useful and illuminative guide, by describing what is being attempted, by indicating problems and constraints, and by suggesting modifications where appropriate. It is planned that the reports will be disseminated regularly during the life of the project.

The first study comprises a group of case studies of leavers' programmes for handicapped pupils in a number of schools representing different forms of provision. The second study, which is continuing throughout the project, is seeking to follow the progress of leavers from the schools. Reports on both studies are in an advanced stage of preparation and will be available in 1982. The third study comprises a group of case studies of course provision for handicapped students in a number of colleges of further education. The fourth study, also involving a set of case studies, focuses on the educational efforts of adult training centres, especially where there is collaboration with further education colleges.

Evaluation of a Local Authority Assessment Initiative
(Researchers: W B Dockrell and H D Black (Principals), D Alexander, E Boyle, R Goring)

As a consequence of their deliberations on the reports of the Munn and Dunning Committees, the Lanark Division of Strathclyde Regional Council is presently engaged in a broad programme of training for senior management both within and outside the schools and the creation of materials for school-based assessment development. As a consequence each secondary school in the Division is working towards the creation of a comprehensive school-assessment policy.

This project has set out to monitor and evaluate the Initiative and in particular to address the following questions:

(1) What changes have taken place in the teachers' knowledge and understanding of assessment techniques during the period of study?

(2) How effective was the centrally directed Initiative in persuading teachers to change or rationalise their practice?

(3) In what ways did schools, departments and groups of individuals vary in their reaction to the Initiative?

(4) What was the reaction to innovative assessment approaches such as pupil profiling, diagnostic assessment, etc?

A number of interim reports on topics such as the role of the advisorate, relationships with headteachers and the role of assistant headteachers have been prepared for internal use by the Project. These will form part of the major report which is now being prepared.

Replication of the 1970 IEA Studies of Achievement in Science and Reading Comprehension

(Researchers: G J Pollock (Principal), B Duncan, E Charleson)

In 1970 Scotland participated in an international evaluation of achievement in Science and Reading Comprehension. Testing was carried out on random national samples of 2,000 10 year-olds and 2,000 14-year-olds.

The aim of the present study was to undertake a replication of the 1970 study in order to assess changes in performance in the two specified subject areas over a decade.

In the original 1970 study the 10-year-old sample was split mainly across two stages, P5 and P6, and the 14-year-old sample was split mainly across the S2 and S3 stages. In the 1981 study, assessments were made by stage rather than by age, and three stages involved.

Comparisons have been drawn between the two sets of data, viz:

(1) 1970 P6 (10-year-olds) v 1981 P6 (10-year-olds)

(2) 1970 S2 (14-year-olds) v 1981 S2 (14-year-olds)

In addition, 1981 assessments by stage — ie P6, P7 and S2 — have been undertaken, and these will provide baseline data for possible future comparisons.

The initial report of the analysis was presented to the Scottish Education Department in June.

Replication of the 1978 Primary Schools Surveys of Achievement in Mathematics and Reading

(Researchers: G J Pollock (Principal), B Duncan, E Charleson)

In 1977-78 the Scottish Education Department carried out an evaluation of primary education in Scotland. As part of that exercise the Research Services Unit of SCRE undertook in 1978 a national survey of performance in Mathematics and Reading Comprehension. Testing was carried out on random national samples of approximately 2,000 pupils at each of the P4 and P7 stages.

The aim of the present study was to undertake a replication of the 1978 study with a view to assessing changes in performance in the two specified subject areas.

In 1981 testing again took place in June at both the P4 and P7 stages. The P7 sample in 1981 was the same group of pupils who participated at the P4 stage in 1978. The P4 group in 1981 was a new sample of 2,000 pupils drawn at random on a national basis.

Group comparisons were made between the 1978 and 1981 data at both the P4 and P7 stages. It was also possible to study the individual growth in reading and mathematical performance of the group of 1978 P4 pupils over the three years 1978-81.

An initial report of the analysis was presented to the Scottish Education Department in May.

An Evaluation of the Links established between Primary Schools and Non-Formal Education Agencies such as Edinburgh Zoo and the Royal Scottish Museum
(Researchers: J Raven (Principal), J Johnstone, T Varley)

The project, which began in April 1981, is designed to establish the extent to which the Edinburgh Zoo and The Royal Scottish Museum are used by schools in Lothian and Fife for non-formal education. It is also designed to examine the way in which the services of these institutions are used and the benefits they confer on schools and pupils; to assess barriers to development; and to portray effective usage in such a way as to encourage others to do likewise.

A postal survey of the extent of Lothian and Fife primary schools' use of zoo, museum and related facilities has been completed, as has an analysis of the zoo exhibition and its own feedback sheets. Numerous school parties have been accompanied on visits and a number of projects involving visits have been monitored as they developed in a small number of schools with a view to examining the linkages between the visits and the rest of the curriculum. Questionnaires to assess pupils' reactions are being piloted.

Commentary on the Primary Teaching Practice Project
(Principal Researcher: J Raven)

The Primary Teaching Practice Project was set up under Margot Cameron-Jones at Moray House College as a pilot scheme to assess the feasibility of one interpretation of the Sneddon Committee's recommendations relating to the school-based component of teacher education.

The SCRE Commentary is intended as an outsider's view of the strengths, weaknesses, and generalisability of the pilot programme.

Interviews have been conducted with students, teachers in schools, college lecturers, and members of the Advisory Committee on the Primary Teaching Practice Project. Parallel interviews have been conducted with other students, teachers and lecturers.

Further Education Colleges and Changing Student Needs
(Researchers: A C Ryrie (Principal), P Small, E Gordon)

This project is a study of how further education colleges are adapting and adjusting to changes in the employment situation, to the demand for new courses arising from high unemployment, and to the enrolment of students who might otherwise not have gone into further education. Case studies are being carried out in ten colleges in Scotland, with a view to exploring four issues:

(a) the extent to which these developments are bringing about organisational change both within the colleges themselves and in their relationships with outside bodies,
(b) whether the new courses are requiring changes in curriculum or

the syllabus of courses; and, in particular, whether the content of new courses is flexible enough to meet the needs of students;

(c) the extent to which the introduction of new courses and new types of students is leading to an increased need for guidance, counselling and concern for personal development;

(d) whether the new courses are leading to the development of new teaching methods and techniques, and to new styles of relationship between staff and students.

Information on these topics is being gathered mainly by means of interviews with principals and staff of the colleges and by questionnaires to groups of students. The object is to identify issues and problems and to point to different ways in which colleges are meeting changing circumstances and demands.

St Andrews College: A Study of Amalgamation
(Researchers: A J Pollock (Principal), W G Thorpe)

This project, commissioned by St Andrew's College, involves a study of the attitudes of staff, both academic and non-academic, and students, to the establishment of the new St Andrew's College. The work has involved (1) interviews with selected individuals and (2) the administration of questionnaires to larger samples of staff and students and former students. A report of the study has been completed.

1983 Mathematics Assessment
(Researchers: G J Pollock and B Duncan (Principals), W G Thorpe, E Charleson)

This study is intended to investigate the feasibility of undertaking monitoring of standards in mathematics at the P4, P7 and S2 stages.

The work represents an extension of the assessments previously undertaken by the Council for the Scottish Education Department in 1978 and in 1981.

A multi-matrix sampling procedure will be adopted which will enable a more detailed examination of performance in particular areas of the curriculum to be undertaken. It is also intended to include a sufficient overlap with items from previous studies to enable comparisons over time to be studied. In addition to evaluating performance at national and school level, individual performance in selected content areas will also be analysed.

Approximately 100 classes at the P4 stage and 150 classes at the P7 and S2 stages will be involved in the assessment. Testing is scheduled to take place in May 1983.

Scottish Museums of Education
(Researcher: T E M Landsborough)

At the suggestion of the Education and the Arts and Recreation Committees of the Convention of Scottish Local Authorities, a study was

carried out, funded by the Scottish Education Department. The study surveyed current practice by all authorities in Scotland and documented existing holdings and procedures for acquiring new materials. It also noted gaps in current provision and needs for the future. The study will serve as a basis for a report to COSLA. The project began in February 1982. The final report has been prepared.

Research Services Unit
(Researchers: G J Pollock (Head of Unit), W G Thorpe, S Freshwater, E Charleson, J Donoghue, D Scott)

The Research Services Unit continues to provide a service for bodies working in the educational field. The work which the Unit undertakes can be classified under three main headings:

(1) Professional advice and consultancy —
  (a) on the design and planning of research projects
  (b) on the evaluation of external research projects
  (c) on the selection and use of test materials
  (d) on the selection procedures for training programmes
(2) Statistical services and data processing —
  (a) consultation and general advice on statistical matters
  (b) assistance in the analysis of data
  (c) validation of selection procedures
(3) Collaboration with other bodies in research projects
  (a) service on research committees and steering committees
  (b) collaboration in joint projects with external bodies
  (c) the carrying out of surveys and other contract work for external bodies.

Work carried out by the Unit in the past year includes:

(1) The Second International Survey of Mathematics organised by the International Association for the Evaluation of Educational Achievement (see report on p 18)
(2) Analysis of tests of mathematics performance at P7 in Central Region.

The latter study is an extension of work carried out on behalf of Central Region in previous years. Tests prepared by the Region were administered to a random group of approximately 500 P7 pupils. Analysis of the resulting data has been undertaken by the Unit and a report will shortly be presented to Central Region.

SCRE SILVER MEDAL

The Council's Silver Medal for 1982 has been awarded to Dr Christopher E Cumming of Moray House College of Education.

The award is made annually in respect of research published in the two years ending on the 31st December of the previous year (in this case 1981) to a researcher under the age of 40 throughout the qualifying period. The recipient must be either a Scot or have undertaken his research in Scotland.

Dr Cumming's award related to his study of the elimination of corporal punishment in a number of Scottish secondary schools. The relevant publications, of which he was the senior author, were *Making the Change* and the research appendix of *Discipline in Scottish Schools, the final report of the Working Group on Corporal Punishment of the Convention of Scottish Local Authorities*. During the time he was undertaking the research, Dr Cumming was seconded from Moray House College to SCRE.

SCRE RESEARCH PRIZES

The following prizes have been awarded by SCRE for the year 1982:

First Prize: R H Millar for his University of Edinburgh MPhil thesis, "Curriculum and Control: the Rhetoric of School Science Curriculum Innovation 1960-1980".

Second Prize: G McMillan for his University of Edinburgh MSc thesis, "The Use of Behavioural Punishment Techniques with the Mentally Handicapped".

For the purpose of making these awards, the adjudicators considered theses nominated by relevant university departments as being the best non-doctoral theses submitted to them in the preceding year (1981).

3i

LIAISON WITH OTHER ORGANISATIONS, 1981-82, INCLUDING CONSULTATIVE AND ADVISORY SERVICES UNDERTAKEN BY STAFF, PAPERS DELIVERED BY STAFF, AND STAFF PUBLICATIONS

Council Representation on Committees

International Association for the Evaluation of Educational Achievement (IEA), Standing Committee (D)*
International Association for Educational Assessment (IAEA), Executive Committee (D)
CCC Committee on Secondary Education (D)
CCC Committee on Primary Education (AD)*
City and Guilds of London Institute, Policy Committee for Education and Training (D)
IEA Mathematics, International Committee (DD)*
IEA Mathematics, Scottish National Committee (W G Thorpe)
Schools Council, Consultative Committee on the Impact and Take-Up of Schools Council Projects—Chairman (D)
National Inter College of Education Committee on Educational Research (DD)
SERA Executive Committee (DD)
SCOTBEC Policy Review Committee (DD)
Fifth International Symposium on Educational Testing, Organising Committee, (DD)
Central Region Collaborative Research Advisory Group (DD)
Scottish Central Committee on English, Sub-Committee on Assessment in S1 and S2 (E Spencer)
Stirling University "Language Skills in English" Project, Steering Committee (E Spencer)
Dundee College of Education "Writing Across the Curriculum Project (Upper Primary and Secondary)", Advisory Committee (E Spencer)
Lanark Division (Strathclyde) Steering Committee on Assessment (H Black)
Moray House "Assessment in Home Economics" Project, Advisory Committee (H Black)
"Pathways to the Professions" Project, Advisory Committee (J Raven)
Napier College Experience-based Management Education, Validating Board (J Raven)
ERCC Treasury Supported Users Committee (W G Thorpe)

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*D —Director
DD—Depute Director
AD—Assistant Director

Papers Delivered at External Conference

Director	"Human Assessment" and "Assessment in the Affective Domain", NATO Congress on Assessment in its Cultural Context, Kingston, Ontario, August 1981. "Profiling and Profile Reporting", Coombe Lodge (the Further Education Staff College), Blagdon, Bristol, October 1981. "Moderation—by Inspection or by Consensus", Associated Examining Board Seminar, Grantham, Lincolnshire, November 1981. "Formative Assessment", meeting of International Association for Educational Assessment, Stockholm, May 1982. "Diagnostic Assessment: the use of observation schedules by teachers", Fifth International Symposium on Educational Testing, Stirling, June 1982.
Depute Director	"Education and Employment—Survey of Scottish Leavers", BERA Annual Meeting, Alsager, September 1981. "Curriculum Changes in School Mathematics in Scotland and their Effect on Achievement", Public Forum, IEA General Assembly, Canberra, Australia, February 1982. "Developments in Defining and Assessing Basic Skills", Fifth International Symposium on Educational Testing, Stirling, June 1982.
H Black	"Pupil Profiles—The Scottish Experience", DES Assessment Conferences, Leeds and Sheffield.
M Corrie and S Zaklukiewicz	"On From Special School", National In-Service Course, Jordanhill College of Education, January 1982.
N McKay	"Reporting to Parents and Employers", SCRE Research Seminar, February 1982.
A Peacock, J Crowther and M Vallely	"The Role and Potential of Community Schools", Social Research Association Conference on Learning to Live without Work, October 1981. "Creating Alternative Responses through Community Schooling", SERA Conference, March 1982.
J Raven	"The Role of Social Research in Modern Society", New Universities Quarterly Invitational Conference, "Whither Funded Research?", Sheffield, July 1981.

"Broadening the Basis of Assessment: Some Reasons, Some Problems, and Some Progress", and "Progressive Matrices: Stability and Change in Western Societies", NATO Congress on Assessment in its Cultural Context, Kingston, Ontario, August 1981.

"Values and Cognitive Development", British Educational Research Association Conference, September 1981.

"The Role of Microprocessors in General Education", Scottish Educational Research Association Conference, September 1981.

"Perceptions, Attitudes and Expectations Associated with Innovation" and "Economic Development, and the Potential Role of Education, Staff Development and Organisational Development in Promoting Growth", Social Research Association Conference, February 1982.

"The Role of Parents and Teachers in Promoting Children's Development", British Psychological Society (Scottish Branch) Conference, April 1982.

A C Ryrie

"Fate or Freedom: Decisions in Secondary School", SCRE Research Seminar, February 1982.

E Spencer

"A Simple Observation Schedule for the Teaching of Writing" and "A Categorisation of School Writing"—written submissions to meeting of Steering Committee the IEA International Study of Achievement in Written Composition, the Curriculum Laboratory, University of Illinois, Urbana, Illinois, USA, Autumn 1981.

"Writing in Schools: The State of the Art and Possible Changes in it", joint meeting of Glasgow English teachers and the English Departments of the Universities of Glasgow and Strathclyde, January 1982.

"Principles for Teaching Writing in the Upper Secondary School and the First Year of University". Conference of Glasgow English teachers and members of staff of the Universities of Glasgow and Strathclyde, Ross Priory, March 1982.

"The Place of Assessment in Teaching Writing", SCOLA Conference, Edzell, March 1982.

Contributions to In-Service Training of Teachers by SCRE Staff

Very many contributions have been made throughout the year in schools, teachers' centres, etc, from Stornoway to the Borders. These contributions have in some cases involved the giving of papers and in others the conduct of seminars. Staff from the Diagnostic Assessment and Writing Across the Curriculum projects have figured particularly prominently in this work.

The series of seminars for local authority advisers and officials and for staffs of colleges of education, instituted in February 1982, will, it is hoped, provide indirect support for these endeavours to help teachers.

Journal Articles and other Publications

Director	"Certifying School Graduates", in A Levy and D Nevo, *Evaluation Roles in Education*, Gordon and Breach, 1981. "Using Continuous Assessment to the Full", *West African Journal of Educational and Vocational Measurement*, 1981.
Assistant Director	"Praising with Discretion", *Research in Education* **26**, SCRE, August 1981.
H Black (with P M Broadfoot)	*Keeping Track of Teaching*, Routledge & Kegan Paul, 1982.
M Corrie, J Haystead and S Zaklukiewicz	*Classroom Management Strategies*, SCRE Publication 78, Hodder & Stoughton, 1982.
C E Cumming	"Eliminating Corporal Punishment", *Research in Education* **27**, SCRE, January 1982.
J Raven	*The 1979 Standardisation of the Standard Progressive Matrices and Mill Hill Vocabulary Scale, with comparative data from other societies and times*, H K Lewis, 1981. "Raven's Progressive Matrices Scores: Stability and Change in Western Society", *Proceedings of NATO Conference on Assessment in its Cultural Contrast, Kingston, Ontario, 1981.* "Toward an Understanding of Social Behaviour in Ireland", *International Review of Applied Psychology* **30**, 1981. "Broadening the Base for Educational Assessment: Some Reasons, Some Problems, and Some Suggestions", in *Newsletter of the Scottish Association of Local Government and Educational Psychologists*, **31**, 1981.

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Scottish Council for Research in Education

ACCOUNTS FOR THE YEAR ENDED 31st MARCH 1982

BALANCE SHEET AS AT 31st MARCH 1982

	£	*1982* £	*1981* £
Fixed Assets			
Tangible Assets:			
Office Furniture, Furnishings and Equipment (Note 4)		5,100	6,450
Current Assets			
Sundry Debtors	35,083		41,783
Cash at bank and in hand:			
Cash on Deposit	1,382		2,429
Cash in Bank Current Account	65,799		35,033
Cash in Hand	119		11
	102,383		79,256
Creditors: amounts falling due within one year			
Sundry Creditors	23,338		27,814
Net Current Assets		79,045	51,442
Total Assets less *Current Liabilities*		84,145	57,892
Capital and Reserve (Note 5)			
Publications Fund		21,000	15,000
Maintenance and Replacement Fund		4,500	2,500
General Fund		58,645	40,392
		84,145	57,892

H L Philip, *Member of Council*

J Hume, *Member of Council*

Scottish Council for Research in Education

INCOME AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED 31st MARCH 1982

	Note	*1981-82* £	*1980-81* £
Income			
Support Grants and Donations	1	299,678	258,016
Contributions towards Cost of Projects	2	294,419	244,410
Other Income	3	2,181	3,430
Interest on Deposits		991	181
		597,269	506,037
Expenditure			
Specially Funded Research Projects	2	336,803	286,449
Other Projects, Services and Grants	3	92,708	74,334
		429,511	360,783
General Expenditure —balance after allocation of £28,718 (1980/81 £29,507) to Specially Funded Research Projects		149,505	138,805
		579,016	499,588
SURPLUS for Year	5	18,253	6,449
NOTE: General Expenditure includes:			
Depreciation and loss on sale		3,095	1,604
Hire of Equipment		1,274	762
Audit and Accounting Fees		3,341	2,832

REPORT OF THE AUDITORS TO THE MEMBERS OF THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

We have examined the foregoing Balance Sheet, Income and Expenditure Account, and the attached Notes on Accounts which have been prepared under the historical cost convention. In our opinion the Accounts comply with the Companies Acts 1945 to 1981 in so far as the provisions of these Acts apply to these financial statements, and together with the Cash Account give a true and fair view of the state of affairs of the Company as at 31st March 1982 and of the surplus and of the Source and Application of Funds for the year ended that date.

ROBERTSON, CARPHIN & CO, CA.

Edinburgh, 21st June 1982

ACCOUNTING POLICIES

A. *Basis of Accounting*

The Council is constituted as a company limited by guarantee and to comply with normal Companies Act accounting conventions, prepares its accounts on the historical cost basis using the accruals concept.

B. *Depreciation*

Office furniture, furnishings and equipment are depreciated by an overall annual charge, with a view to writing down the assets to approximate scrap value at the end of their estimated useful lives.

C. *Taxation*

The Council has charitable status as an educational body and accordingly has no Corporation Tax liabilities on revenue surpluses or untaxed interest.

D. *Publications Fund*

In order to avoid depletion or distortion of the Council's income and expenditure in any one year, the costs of publishing research findings are normally charged to the Publications Fund. The Fund is maintained from sales of these publications as and when they take place, from grants, and from periodical transfers from the Income and Expenditure Account. No value is placed on stocks of unsold publications.

E. *Maintenance Fund*

The Maintenance Fund has been set up to meet extraordinary expenditure on the Council's leased premises.

F. *Statement of Source and Application of Funds*

To comply with a standard accounting practice the Council should prepare a statement showing the source and application of funds. The format normally used by commercial organisations is not considered appropriate for the Council, and Note 7 summarises cash transactions (Receipts and Payments) for the year in a way which it is believed satisfies the objectives of the standard accounting practice referred to.

NOTES ON ACCOUNTS

		1981/82	1980/81
1. Support Grants and Donations		£	£
Scottish Education Department		274,258	247,150
Less: Special Grants—			
Moray Place Expenses		4,258	17,150
		270,000	230,000
Scottish Regional Education Authorities:	£		
Borders	540		
Central	1,458		
Dumfries and Galloway	783		
Fife	1,900		
Grampian	2,543		
Highland	1,031		
Lothian	4,045		
Shetland	100		
Strathclyde	12,850		
Tayside	2,168		
Western Isles	—		
Orkney	106		
		27,524	26,008
Educational Institute of Scotland		1,500	1,500
Local and District Associations of Educational Institute of Scotland:			
Aberdeen	10		
Central	40		
Shetland	4		
Banff	60		
Ettrick	10		
Fife	30		
Gordon	10		
Kincardine and Deeside	10		
Moray and Nairn	25		
Orkney	25		
Roxburgh	35		
East Lothian	5		
		264	214
Other Grants:			
Scottish Educational Research Association	250		
Association of Assistant Headteachers Early Education	40		
Donation	100		
		390	294
		299,678	258,016

2. **Specially Funded Research Projects**	*Expenditure* £	*Recoverable* £
SSRC		
Social Construct[illegible] of Teachers' Careers*	13,360	6,580
Perceptions of School Based Assessment	25,586	25,298
After School**	36,412	33,889
SED		
Awareness of Opportunity*	32,287	15,308
Diagnostic Assessment in Secondary Schools	14,279	11,973
1983 Maths Assessment	1,680	1,594
Scottish Museum of Education	1,522	1,522
Open Plan and Other Areas in Secondary Schools	20,772	19,992
Primary Survey and IEA Replications	32,013	30,354
Further Education Colleges and Student Needs	4,558	4,558
Non Formal Education	22,673	21,997
Further Education for the Handicapped*	27,611	15,406
Commentary on Primary Teaching Practices	2,582	2,563
SED/Local Authorities		
Writing Across the Curriculum Phase I	18,036	18,036
Writing Across the Curriculum Phase II	7,440	6,920
Alternatives to Corporal Punishment	2,083	1,438
Lanarkshire Assessment Programme	21,125	20,439
Local Authorities		
Evaluation of Lothian Community Schools	15,757	15,757
Others		
Pakistan Primary Education	16,962	15,995
Evaluation of Craigroyston Curriculum	23,883	23,618
EIS Primary School Studies	1,182	1,182
	336,803	294,419

* Project jointly funded by SCRE and Sponsor
** Project jointly funded by SED and SSRC

3. **Other Projects, Services and Grants**		
Research Services Unit		
General Services	23,257	2,181
IEA Mathematics Survey***	23,222	
Information Services and Library	35,772	
Grants	390	
Teaching Strategies in the Primary School	7,062	
Falling School Rolls	3,005	
	92,708	2,181

***This project represents the main internal research activity of the Council.

Explanatory note on Expenditure

Expenditure includes, in addition to the direct costs and recoverable overheads, a proportion of senior staff costs not normally charged to the sponsoring body.

4. **Office Furniture, Furnishings and Equipment Cost**	*1981-82*	*1980-81*
	£	£
Cost at beginning of year	28,078	26,494
Expenditure during year	2,470	1,554
	30,548	28,048
Disposals	4,885	—
Total Cost at 31.3.82	25,633	28,048
Depreciation		
Balance at beginning of year	21,598	19,994
Eliminated in respect of disposals	2,383	—
	19,215	19,994
Depreciation charge for year	1,318	1,604
Balance at 31.3.82	20,533	21,598
Cost less Aggregate Depreciation	5,100	6,450

5. **Movement of Funds**		
Publications Fund		
Transfer from Income and Expenditure Account	2,957	4,606
Income During Year	19,808	15,000
	22,765	19,606
Less Expenditure	16,765	18,957
	6,000	649
Fund at beginning of year	15,000	14,351
Fund at end of year	21,000	15,000
Maintenance Fund		
Transfer from Income and Expenditure Account	2,000	1,467
Fund at beginning of year	2,500	7,500
	4,500	8,967
Expenditure during year	—	6,467
Fund at end of year	4,500	2,500
General Fund		
Fund at beginning of year	40,392	33,943
Surplus for year	18,253	6,449
Fund at end of year	58,645	40,392

6. **Employees**

Nine employees of the Council were in receipt of emoluments in excess of £10,000, grouped as follows:

	1981/82	*1980/81*
£10,000 — £14,999 =	6	4
£15,000 — £19,999 =	2	2
£20,000 — £24,999 =	1	—

The average number of persons employed in each week of the financial year was 42, (45), and the aggregate remuneration was £387,183 (£296,933).

7. **Cash Account for Year ended 31st March 1982**

Receipts	*1981-82*	*1980-81*
	£	£
Support Grants and Donations	299,678	258,016
Interest and Miscellaneous Income	1,328	648
Sales of Publications	18,914	14,685
Sales of Furnishings and Fittings	725	—
Contribution to Specific Non-recurring Expenses:		
Moray Place Expenses	4,258	17,150
Income Tax Recovered	—	511
Recovery of Project Costs	305,357	275,111
	630,260	566,121
Payments		
General Expenditure—		
Salaries and Other Employment Costs	108,442	89,336
Accommodation	41,821	30,132
Other	34,688	19,378
Research and Information Services	45,252	38,290
Publications	15,829	16,588
Capital Expenditure and Equipment	2,470	1,554
Maintenance Fund Expenses	—	6,467
Removal Expenses	3,398	11,065
Moray Place Expenses	4,258	17,150
Expenditure on Specific Research Projects (including SCRE "Internal Projects")	344,275	317,369
	600,433	547,329
Excess of Receipts over Expenditure	29,827	18,792
Opening Balance of Cash Funds	37,473	18,681
Closing Balance of Cash Funds	67,300	37,473

Note: Differences between cash receipts and payments and figures in the Income and Expenditure Account reflect the "accruals basis" used in the latter account — expenses unpaid at the year end appear as creditors and sums due not yet received in cash appear as debtors in the Balance Sheet.

Occasional Paper

SIDE EFFECTS IN EDUCATIONAL RESEARCH

The paper delivered by
Dr David A Walker, Director, SCRE, 1958-70,
on the occasion of his being awarded the Fellowship of the Scottish Council for Research in Education at its Annual General Meeting, held in Edinburgh on 16th September 1982.

It is now more than ten years since I entered the "retired" state and I hope that this audience does not expect to hear from me some scintillating observations on the present state and problems of educational research. On the other hand I hope that you will not be bored by the semi-anecdotal nature of this talk, which ranges over the fifty years during which I have been more or less active in the field.

In recent years it has been borne in on me that the direct effects of educational research may not be so important as what I might call the side-effects, and that is the thesis I put forward today. In medical parlance I think the term refers mainly to those effects which are undesirable, but I wish to dwell on those I would describe as desirable (though some may disagree in this value-judgment). I leave the topic of undesirable side-effects to some other investigator—it might be quite an interesting one to work on. I also wish to concentrate on research carried out, or assisted by, the Scottish Council for Research in Education, as that with which I am most familiar.

In educational research, as you are aware, it is often difficult to establish definite cause and effect relationships. This paper, I regret to say, is full of "post hoc ergo propter hoc" fallacies. It is also difficult to say sometimes whether the climate of educational thought generated a research project or the findings of the research generated the climate of thought. I hope to select cases where the research either clearly produced the side-effect or at least had an appreciable effect on the climate of educational thought, rather than the converse.

One of the earliest publications of the Council was McClelland's *Selection for Secondary Education*,[1] though the work had been carried out independently in Dundee by McClelland and his colleagues. The book appeared in 1942, when selection was a live issue. Some of us applied the findings of that research to the operation of schemes for the transfer from primary to secondary courses in a Scottish county, the Advisory Council gave the scheme further publicity, the Scottish Education Department issued a circular, and changes took place throughout Scotland. These we might term main effects; what I wish to refer to as a side-effect was the education of backward pupils in the 12-14 age-group.

The Education Act of 1936 had defined secondary education as a

stage in the life of all pupils, following the completion of the primary course. Prior to this, pupils who had not reached in the Qualifying Examination the standard required for admission to academic courses were placed in advanced divisions—of the primary school—or retained in primary classes. The McClelland Report showed that in Dundee in 1936 about ten per cent of the pupils presented for transfer to secondary courses were retained in primary schools with a view to later presentation. The Report recommended that retention should be resorted to in only a small number of cases and for a limited period. If the recommendation were accepted and practically all pupils in the age-group transferred to secondary courses, they estimated that appropriate courses would be required for about 16 per cent of the age-group.

The Advisory Council on Primary Education,[2] which was set up in 1943 and reported in 1946, drew attention to the fact that it was not uncommon in some areas to find pupils between the ages of 12 and 14 retained in primary schools with no provision for secondary education of any kind. They emphasised that every child had the right to some form of secondary education. The 1945 Education Act and a Departmental Circular[3] reinforced the point, the latter referring to modified secondary courses (which led to some teachers describing the participants as modified pupils). The problem was of course magnified by the raising of the school leaving age in 1947.

By 1949 the Department was able to report that schools (and here I quote) "were feeling their way towards the proper kind of secondary education for non-academic pupils" and in 1950 the request for schemes of work included a reference to modified courses for less able pupils.

The subsequent history, including the provision of courses for the teachers of these pupils and the recognition of their qualifications, is a tangled one into which I do not propose to enter. The point I wish to make is that the origins of the concern for the less able in the twelve to fourteen or fifteen age-group arose partly if not mainly from the researches of McClelland and his colleagues in the late nineteen-thirties.

The climate of educational thinking may have been influenced also by the publication of the results of the Mental Survey of 1932, which showed the wide range of ability among eleven-year-old Scottish pupils. The Mental Survey of 1947[5] confirmed this finding. In this connection I should like to refer to the results obtained in the testing of the younger siblings of the 1947 Six-Day-Sample. You may remember that as each of the younger brothers and sisters of the sample members reached the age of eleven they were tested on the same test as that used with the sample members. The results are given in Maxwell's *Sixteen Years On*, published in 1969.[6] I do not wish to become involved here in the nature-nurture controversy, but I am surprised that so little attention has been paid by the contestants to the contents of Table 74 in that

volume. It shows the IQs of the sample members and their younger sibs for families where four or more children were tested. The difference between the highest and lowest IQs within the same family ranged from 4 to over 50 points, with a median difference of 26 points of IQ. As Maxwell says, "This variability makes it difficult to maintain the view that IQ is largely determined by environmental conditions." This finding may be regarded as a side-effect of which sufficient notice has not been taken.*

The more obvious side-effects of the Surveys and the follow-up were the interest which was generated among the teachers and others who, as home visitors, kept in touch with the sample members until the young people had reached the age of 27, and the fact that the Surveys and follow-up helped to put Scotland on the international map of educational research, a position which I venture to suggest has been maintained.

In the early 1950s the Council conducted an audiometric and educational survey of an age-group in Fife with a view to ascertaining the incidence and distribution of hearing defects in the group. The results and the Committee's recommendations were published by the Council in 1956 under the title *Hearing Defects in School Children*.[8] The most important finding was not stressed in that report though it was mentioned; it was that the measuring instruments were not at that time sufficiently reliable for the task. Things have probably changed since then, and I hope that a side-effect of that project was an improvement in the construction of audiometers.

In the Scholastic Survey of 1953,[9] the Council tested all the Scottish ten-year-olds, and they numbered over 72,000. By the time the 1963 Survey[10] was planned we had realised that a properly drawn sample could provide the precision required for comparison with the 1953 results. We therefore selected 170 schools from the 2,700 with ten-year-old pupils and tested the ten-year-olds in the selected schools. This type of sampling is much easier to handle administratively but is not so efficient as simple random sampling. In fact the 5,000 pupils tested yielded the same precision as would have been given by a simple random sample of 700 to 1,000 pupils—depending on which of the four tests is under consideration. The difference between the 5,000 and the 1,000, or rather the ratio, which is called the design effect, is due to the fact that pupils in the same school resemble each other in test performance more than they resemble pupils in other schools. The side-effect on which I wish to remark is that these resemblances were much

* Since I wrote this Dr Dockrell has drawn my attention to an article by Zajonc, Markus and Markus,[7] in which the writers present a model to explain the variation in growth of mental maturity within families in terms of varying environments *within* families. Their data include material from the 1947 Scottish Mental Survey, but I note that the references do not include Maxwell's book. It would be interesting to ascertain whether the model accounts satisfactorily for the data in Table 74.

stronger in the 1963 Scottish Scholastic Survey sample than had been found in similar investigations elsewhere. The intra-class correlations ranged from 0.24 to 0.40 compared with the 0.10 given by Peaker for England. Is this because there was a greater range of socio-economic backgrounds between schools in Scotland, or a greater variation in stress on the basic subjects of the primary curriculum? The fact that it was greatest in the test of mechanical arithmetic suggests it had something to do with curricular stress or teaching method.

When writing this paper I learned that the same phenomenon has been found between classes within schools. Various methods of reducing the design effect and thus increasing the precision of the measures obtained are now in use.

I cannot resist the temptation to mention another side-effect of this second survey in 1963. A comparison of the achievements of the ten-year-olds in 1953 and 1963 enabled the researchers to say that standards in the subjects tested had definitely risen during the ten-year interval. I understand that the teachers when stating their claim for increased salaries to the Pay and Prices Review Board, quoted this as evidence of increased productivity!

An earlier interest of the Council in the problems of bilingualism led to a post-war study of Gaelic-speaking children in Highland schools. The main purpose of this project was to make a general survey of the incidence of bilingualism in the schools of the Highland counties and the published report gave the findings of two surveys, one of children in primary schools and the other of pupils in the first year of secondary education. The report, entitled *Gaelic-Speaking Children in Highland Schools*,[11] was published by the Council in 1961, but before then interest generated by the surveys had led to the appointment in Inverness-shire of an organiser who devoted his whole time to the study of problems created by the bilingual situation in the county's schools and to the development of the Inverness-shire Gaelic Education Scheme. Admittedly this was helped by the political and national movements beginning at that time, but the initiative came from a member of the Committee, Dr J A MacLean, who was Director of Education for Inverness-shire. Since then there have been several similar appointments.

This Committee also made a collection of traditional Gaelic rhymes and games for use in schools, which was published by the Council under the title *Aithris is Oideas*.[12] Here I quote from a letter to me from John A Smith, the chairman of the Committee and latterly Vice-Principal of Jordanhill College of Education. He writes "This was the precursor of what has become a notable expansion of Gaelic educational material for schools . . . borrowing at times from our collection and owing something to its example and inspiration."

Twenty years ago the Council became involved with research centres in other countries in efforts to enrich the study of comparative

education by the supply of measures of achievement at various stages. In some tryouts in Scotland a suggestion by a teacher gave rise to an investigation in which we asked teachers to rate each item of a test taken by their pupils on a scale measuring what we called "opportunity to learn" the topic being tested by the item.[13] It should be noted that the ratings were supplied before the test scores were known—ie, there was no question of hindsight affecting the ratings. This variable has turned out to be a most important one in these international projects. In the full scale inquiry into mathematics achievement in which the Council subsequently participated we found that if we ranked the countries in the order of average score made by the 13-year-olds, and also ranked them according to the average opportunity-to-learn ratings, the two rank orders were almost identical. With hindsight this looks obvious, but it was not so at the time. Unfortunately this was not shown in the published report[14] owing to the belated discovery of errors in the data from one country.

This mathematics investigation had other interesting side-effects. At the time the testing was about to take place I was asked to speak to the Glasgow Mathematical Society about the project. After the talk there was a brisk discussion about the "impossibility" of assessing mathematical achievements by multiple choice tests. The objections came mainly from university mathematics staff. My first degree having been in mathematics and natural philosophy, I enjoyed the discussion and endeavoured to show items which measured abilities deemed unmeasurable in this way. A few years later I studied with considerable interest a test of arithmetic, algebra and trigonometry drawn up by a team of university mathematicians, some of them from Glasgow, for use in first year classes and consisting almost entirely of multiple choice items. I must admit that the authors made it clear that the test did not attempt to assess higher level skills.

One side-effect of these international projects which probably affected other countries more than Scotland was the clarification of some terms used in international comparisons. There was considerable interest at the time of the mathematics project in the selective-comprehensive debate, and an item in the school questionnaire dealt with this point. When the preliminary returns were coming in, one member of the international committee noticed that some schools in his country had described themselves as comprehensive. There were, he said, no schools of that type in his country; these schools were probably multilateral, providing a variety of courses. This alerted all of those concerned with the project on the need to be very clear about the meanings of terms used in the different national situations. I have the feeling that even now in this country "comprehensive" means different things to different writers.

In both the second Scholastic Survey and the IEA Mathematics Project we had to seek from the Department information about

numbers in schools and courses. Sometimes the information was not directly available, but the Department very kindly gave us access to Departmental returns from which we were able, with considerable effort, to extract the data we required. This was around 1962 to 1964. In February 1965 the Department appointed to their staff a statistician and in 1967 the first volume of *Scottish Educational Statistics*[15] appeared. I had hoped to report these occurrences as side-effects of the Council's requests for data, but a recent conversation with the Department's first statistician has disillusioned me. The main causes for the new policy were probably the Robbins Report and the need for data on teacher demand and supply. Nevertheless, we might hazard the opinion that the Council's demands contributed to the decision.

In 1962 the Council, in collaboration with the Psychology Department of Edinburgh University, embarked on the Assessment for Higher Education[16] project. This involved a follow-up of the progress of between five and six thousand school-leavers who entered courses of higher education between 1962 and 1965. The co-operation given by universities, colleges and similar institutions was beyond all praise and enabled the Council to bring the project to a satisfactory conclusion. From 1963 and especially from 1964 onwards the Scottish Universities were supplying the Council with extensive data on the progress of these students. In 1966 Edinburgh University set up a committee to investigate student wastage and this in turn led to the formation of other committees, including one on teaching methods. Similar projects began at the same time in other Scottish universities. It seems a reasonable hypothesis that our research project helped to trigger off the universities' own inquiries.

After most of the data had been collected, Professor Stanley Nisbet asked me whether access to the data could be granted to a member of staff in the University of Glasgow. I was very willing, the Council approved and made a grant to further the research. Later, when an application was made by the researcher to the Educational Research Board of the Social Science Research Council one of the referees reported to the Board "this young man has come into a gold mine". The young man (Andrew McPherson) made good use of the data and of data he had himself collected and we now have in the University of Edinburgh a Centre for Educational Sociology with himself as Director.

During this time the Council was also involved in a project entitled Permanence of Learning. This arose from the suggestion that the dissatisfaction expressed by some employers at the achievements of 15-year-old school leavers in the basic skills of English and arithmetic was attributable to loss of learning: the young people had forgotten what they had learned at school.

Tests of basic skills in English and arithmetic were constructed by panels of experienced teachers and administered in 1960 to about 3500 pupils in five different areas ranging from a large city to a small rural

county. A year later the same tests were given to as many as possible of the same group. Many had left school and were undertaking no type of further education, and it was difficult to persuade them to take the tests again. There was only a 50 per cent response and from that point of view the project was unsuccessful. Analysis of the data however made it clear that deficiencies in the achievements of these fifteen-year-olds were attributable not so much to loss of learning as to its absence in the first instance. The Committee therefore changed the emphasis of the investigation to a study of the actual achievements of the 15-year-olds when they were at the stage of being free to leave school. The published report *A Study of Fifteen-Year-Olds*[17] gives a detailed account of the achievements of these young people, who covered practically the whole range of ability, in each of the items of the tests. For example, they showed that the average pupil made low scores in the test of punctuation, could spell only half of the twenty words in the spelling test, was unsure in the handling of decimal fractions, but had a good knowledge of vulgar fractions. No doubt this will all have changed in the intervening twenty years, but the point I make is that these tests were an early form of criterion-referenced tests, and that a project begun as an inquiry into permanence of learning produced a side-effect which became almost a main effect of a different sort.

If my thesis is a good one, and side-effects are so important, should we not programme our projects to include them? Alas, by their very nature they tend to be unpredictable. We cannot list them as the drug manufacturers do in the medical journals. But perhaps there is a point here for these who provide grants—not to be too detailed in specifying where and when the funds have to be spent, and to leave a margin for examining interesting side-effects.

Finally, is not the unpredictable nature of some of these side-effects one of the attractions of research in education?

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A LIST OF RESEARCHES RELATING TO EDUCATION

Presented for postgraduate degrees and diplomas in Scottish universities

1981

Researches are Classified Broadly Under the Following Headings:

Adult/Continuing Education see also Further/Higher Education

Assessment/Examinations

Curriculum Studies (further divided by subject)

Education Overseas

Further/Higher Education

Girls'/Women's Education

History of Education

Maladjustment/Delinquency

Organisation/Administration of Education

Organisation/Administration—Institutional Level

Parents in Education

Pre-School Education

Primary Education

Psychology — see also Maladjustment/Delinquency; Special Education

Secondary Education (not otherwise classified)

Special Education: Handicapped

Special Education: Remedial

Teacher Education/Development

Teachers

Teaching Methods and Aids

Theory, Principles and Philosophy of Education

51

ADULT/CONTINUING EDUCATION

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ASSESSMENT/EXAMINATIONS

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See also
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See also
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See also
(25) **Burchill, Jane**
(68) **Scott, Kenneth B**
(73) **Allan, Terrence W**

GIRLS'/WOMEN'S EDUCATION

See
(5) **Higgins, Kathleen M**
(7) **Macaulay, C**
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HISTORY OF EDUCATION

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See also
(16) **Collins, J B**
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MEd, Edinburgh

See also
(77) **Burton, L**
(98) **O'Loan, J**

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PARENTS IN EDUCATION

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PRE-SCHOOL EDUCATION

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PRIMARY EDUCATION

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See also
(14) **Milne, P**
(75) **Beber, L J**
(77) **Burton, L**
(95) **Elder, R J**

PSYCHOLOGY

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See also

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SECONDARY EDUCATION (unclassified)

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see also

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See also

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SPECIAL EDUCATION: REMEDIAL

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See also

(75) **Beber, L J**

(77) **Burton, L**

TEACHER EDUCATION/DEVELOPMENT

See

(39) **MacDonald, M M**

(51) **Davidson, S M**

TEACHERS

See

(57) **MacNeil, W K**

(60) **Barrie, David A**

(64) **Duncan, A G**

(71) **Raitt, Brian A**

TEACHING METHODS AND AIDS

(95) **Elder, R J** Using microcomputers in primary schools: a study of children's strategies and choice of programs. MEd, Stirling

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See also
(30) **Taylor, Michael T**

THEORY, PRINCIPLES AND PHILOSOPHY OF EDUCATION

(98) **O'Loan, J** Punishment and persons. MEd, Stirling

(99) **Wright, P O** A critical appraisal of the development of ideas and practice in education in relation to poverty and deprivation. MSc, Edinburgh

See also
(10) **Ross, Henry S**
(43) **Dunlop, Alexander D**
(44) **Gordon, David**
(47) **Malcolm, D**
(61) **Lambie, Ian A**
(94) **MacGregor, J**

(Index to authors overleaf).

AUTHOR LIST

* Thesis held in SCRE LIBRARY

Allan, Agnes (86)
Allan, Terrence W (73)
Ames, J W (1)
Banks, James S (74)
Barrie, David A (60)
* Beber, L J (75)
Bell, D (49)
Bryce, Julie A (37)
Brydon, Pamela A (76)
Bulloch, James (41)
Burchill, Jane (25)
Burton, L (77)
Cameron, A (50)
* Chalmers, D S (32)
Chea, Jeanette (42)
Crawford, Francis (11)
Cohen, A (2)
Collins, J B (16)
Cords, D (70)
Costa-Arayo, Pablo (33)
Davidson, S M (51)
Dover, Suzanne M (92)
Duncan, A G (64)
* Dunlop, Alexander D (43)
Dziurawiec, Suzanne (78)
Easton, R (3)
* Elder, Leona (18)
Elder, R J (95)
Evans, Bryon, D (12)
Fearon, Maire (79)
Fleming, William B (65)
Fogden, Margaret (80)
Ford, Christine (52)
Gilhooly, James E (61)
Gordon, David (44)
* Gordon, M J J (13)
Gorlach, Allan C (81)
Green, Catherine E (82)
Hadden, Robert (26)
Hall, Neil (53)
Hamilton, R D (4)
Harvey, D A (54)
* Hazelden, J (55)
Higgins, Kathleen M (5)
Kilkenny, B K (22)
Koch, Elizabeth I (93)
Kruszynski, Michael J (56)
Kyle, Peter (83)
Lamble, Ian A (61)
Leach, T J I (34)
Macaulay, C (7)
McDonagh, J C (38)
MacDonald, M M (39)
MacDonald, Roderick S (27)
MacGregor, J (94)
MacKay, Donald A (45)
Mackie, Ruth (87)
McLaren, David (46)
McLeish, A (21)
* McMillan, G (88)
McMillan, Maureen (96)
MacNeil, W K (57)
Malcolm, D (47)
Matsoso, Sister M M (35)
Merchant, F S (19)
* Millar, R H (28)
Milne, P (14)
Mitchell, P (48)
Montgomery, Stuart A (89)
Mudie, P M (40)
Murphy, D (15)
Mutrie, Nanette (24)
Noble, Frances (8)
Nowikowski, F (72)
Oey, L H H (36)
O'Loan, J (98)
Paterson, Douglas M (9)
Paterson, J D (66)
Raitt, Brian A (71)
Richardson, Geoffrey (67)
* Roberts, George (97)
Robertson, Janet C (58)
Ross, Henry S (10)
* Ruddick, J (90)
Ryan, M (62)
Scott, Kenneth B (68)
Smart, Moyra J M (85)
Spence, James H (31)
Stewart, A I R (29)
Strachan, Fiona M (17)
Syme, C M (23)
Taylor, Michael T (30)
Toman, M J (59)
* Watson, Joyce E (20)
* Watt, John (69)
Woolley, Janet (84)
Wright, P O (99)
* Young, I H (91)
* Young, John (63)

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